



25 December, 2023

“FLip” mutations of SARS-COV-2

Context: Researchers at the University of Tokyo predict that the omicron subvariant JN.1 is poised to become the predominant lineage of the SARS-CoV-2 virus globally in the near future.

- **Emergence and Classification of JN.1 Variant:**
 - ✓ JN.1 designated a Variant of Interest (VOI) on December 18, 2023.
 - ✓ Descendant of BA.2.86 lineage, originating in August 2023.
 - ✓ Rapid surge in recent weeks led to its classification.
- **Genetic Mutations and "FLip" Variants:**
 - ✓ BA.2.86 and JN.1 carry mutations in the spike protein, including L455S (FLip mutation).
 - ✓ FLip mutations switch positions of amino acids, increasing transmissibility.
 - ✓ HK.3 sublineage also acquired L455F mutation.
- **Impact on Transmissibility and Binding:**
 - ✓ "FLip" mutations enhance transmissibility by altering the spike protein.
 - ✓ F456L and L455F substitutions decrease ACE2 receptor binding capacity.
 - ✓ XBB.1.5+F456L and BA.2.86+S:L455S show stronger binding to ACE2.
- **Reproductive Number (Re) and Transmissibility:**
 - ✓ JN.1 exhibits higher effective reproductive number (Re) in France, the UK, and Spain.
 - ✓ Re is an estimate of virus transmissibility in an epidemic.

- **Evading Immunity and Breakthrough Infections:**
 - ✓ JN.1 potentially evades vaccination and displays enhanced ability to evade immunity.
 - ✓ Study shows increased breakthrough infections compared to BA.2.86.

- **Global Impact and WHO Statistics:**
 - ✓ Globally, a 52% increase in cases and 8% decrease in deaths from Nov 20 to Dec 17, 2023.
 - ✓ India records 3,241 new cases and 21 deaths during the same period.
 - ✓ Southeast Asia Region reports a 388% increase in new cases.
- **Testing and Reporting Challenges:**
 - ✓ Reported cases may not accurately represent infection rates due to reduced testing and reporting.
 - ✓ COVID-19 reporting integrated into respiratory disease surveillance globally.
- **JN.1 Prevalence and CDC Warning:**
 - ✓ CDC projects JN.1 to account for 39-50% of all SARS-CoV-2 variants.
 - ✓ JN.1's growth suggests potential higher transmissibility or immune evasion.
 - ✓ Continued monitoring needed to assess the impact on infections and hospitalizations.
- **EG.5 Trends and Global Scenario:**
 - ✓ EG.5 remains the most reported VOI globally but shows declining trends.
 - ✓ Despite JN.1's prevalence, its impact on infections and hospitalizations is uncertain.
- **Vaccination Recommendations:**
 - ✓ INSACOG chief suggests no need for additional vaccine doses except for specific groups.
 - ✓ Caution advised for individuals aged 60 or older, those with comorbidities, and immunocompromised individuals.
- **Global Response and Future Outlook:**
 - ✓ Global response to the evolving situation, with increased monitoring and research.
 - ✓ Uncertainty about the future impact of JN.1 on the spread of infections and healthcare systems.

Padma Awards

Context: Many wrestlers have returned their Padma awards in the issue of appointment of WFI Chief Controversy.

- **Padma Awards Overview:**
 - ✓ Padma Awards are esteemed civilian honors in India, announced annually on Republic Day alongside Bharat Ratna.
 - ✓ These awards recognize exceptional achievements across various fields, emphasizing a public service element.
 - ✓ The total number of awards granted in a year is capped at 120, excluding posthumous and NRI/foreigner/OCI awards.
 - ✓ Importantly, the Padma Award does not confer a title and cannot be utilized as a prefix or suffix to the recipient's name.

Face to Face Centres





25 December, 2023

- **Categories of Padma Awards:**
 - ✓ Padma Vibhushan, the highest category, is bestowed for exceptional and distinguished service.
 - ✓ Padma Bhushan is awarded for distinguished service of a high order.
 - ✓ Padma Shri is granted for distinguished service.
- **Eligibility Criteria:**
 - ✓ These awards are open to individuals without distinctions of race, occupation, position, or gender.
 - ✓ Government servants (excluding doctors and scientists) and PSU employees are generally ineligible.
 - ✓ While posthumous awards are typically not conferred, exceptions may be made in highly deserving cases.
 - ✓ A higher Padma award can be given only after a minimum five-year gap from the previous award, with exceptions considered for highly deserving cases.
- **Nomination Process:**
 - ✓ The nomination process involves the constitution of the Padma Awards Committee by the Prime Minister annually.
 - ✓ The committee, headed by the Cabinet Secretary and comprising key officials, reviews nominations.
 - ✓ Recommendations from the committee are submitted to the Prime Minister and the President of India for final approval.
- **Historical Background:**
 - ✓ The Government of India instituted two civilian awards, Bharat Ratna and Padma Vibhushan, in 1954.
 - ✓ Originally having three classes, Pahela Varg, Dusra Varg, and Tisra Varg, Padma Vibhushan was later renamed as Padma Vibhushan, Padma Bhushan, and Padma Shri in 1955.
- **Bharat Ratna**
 - ✓ Bharat Ratna stands as the highest civilian award in India, bestowed in acknowledgment of exceptional service or performance of the highest order across various fields.
 - ✓ Distinguished from Padma Awards, Bharat Ratna recommendations are made by the Prime Minister to the President of India.
 - ✓ The annual cap for Bharat Ratna Awards is limited to a maximum of three, emphasizing selectivity and distinction.

NEWS IN BETWEEN THE LINES

Tribunals in India



Recently, the Supreme Court has clarified that tribunals functioning under the strict parameters of their governing legislation cannot direct the government to make policy.

Tribunals in India:

- Tribunals are **quasi-judicial bodies** established to handle specific disputes or areas of law outside the traditional court system.
- They are specialized bodies focusing on particular fields like **taxation, environment, administrative, labor**, etc.
- Tribunals follow a less formal procedure compared to regular courts, allowing for quicker resolution of disputes.
- They have the authority to adjudicate disputes, make decisions, and provide remedies like **courts** but operate independently.
- **Article 323A** empowers Parliament to create administrative tribunals (both central and state) for matters related to public servants' recruitment and service conditions.
- **Article 323B** specifies subjects (e.g., **taxation, land reforms**) where Parliament or state legislatures may establish tribunals through enacted laws.
- Tribunals contribute to administrative efficiency by handling specialized **disputes, reducing the burden** on regular courts and providing swift justice in their designated areas.

Aerogel Fibre



Recently, the researchers have developed knittable aerogel fiber based on polar bear fur structure.

About Aerogel Fibre:

- Aerogel fiber is a new type of **functional clothing fiber** with excellent thermal **insulation, moisture absorption** and breathability.
- It has unique properties, such as high porosity, low density and low thermal conductivity.
- It is an ideal material for thermal insulation.
- The fiber has exceptional thermal and mechanical properties and is washable, dyeable and durable.
- It's also suitable for knitting or weaving.
- The fiber is made using aerogel, a thermal insulation material that's mainly used in the aerospace industry.
- The resulting fiber is ultralight and coated with polyurethane.
- It can protect wearers from the cold at a fraction of the thickness needed for conventional sweaters or down jackets.

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25 December, 2023

Turquet's Octopus

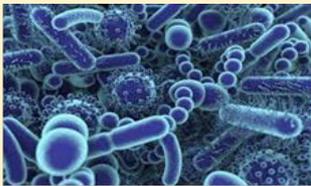


Recently, genetic analysis of an Antarctic Turquet's Octopus suggests that the West Antarctic Ice Sheet collapsed about 129,000 to 116,000 years ago during a period just 1 degree Celsius warmer than preindustrial levels.

About Turquet's Octopus:

- Turquet's octopus (**Pareledone turqueti**) is a species of benthic octopus that can be found in the Antarctic.
- It can be found at a wide range of depths, from shallow waters to **4,000 meters deep**.
- It has a mantle length of **15 centimeters**.
- It is characterized by its nearly **smooth skin**, which is covered with **low granular bumps**.
- It also lacks a skin ridge around its body.
- In the wild, **Pata gonian toothfish** and **Weddell seals** prey on **Turquet's octopus**.
- The species has been living in the **Southern Ocean** around Antarctica for about 4 million years having about **12-year lifespan**.
- According to research published in the journal Science, Turquet's octopuses were able to move around a melted West Antarctic Ice Sheet as recently as **125,000 years ago**.
- It has been recorded **least concern in IUCN list**.

Microbiome



- Microbiome refers to the collection of **bacteria, fungi, viruses, algae, protozoa** and **viruses** present in a particular location, such as the **human eye**.
- The microbiome is a collection of microorganisms that live in a particular environment.
- Microbes are so small that they can only be seen with a microscope, but they contribute significantly to human health and wellness.
- In humans, the microbiome is often used to describe the microorganisms that live in or on a specific part of the body, such as the **skin or gastrointestinal tract**.
- The human body contains around **39 trillion bacteria**.
- Imbalances in the gut microbiota have been linked to **gastrointestinal** conditions like **inflammatory bowel disease (IBD)** and **irritable bowel syndrome (IBS)**.
- They have also been linked to wider systemic manifestations of disease like obesity, type **2 diabetes** and **atopy**.

Place in News

Bab el-Mandeb

Recently, the Houthi attacks on tankers passing through the narrow Strait has disrupted one of the busiest global shipping lanes, dragging the U.S. deeper into the conflict.

About Bab el-Mandeb Strait:

- The Bab-el-Mandeb Strait is a strategic choke point that connects the Red Sea to the Gulf of Aden and the Indian Ocean.
- It is located between Yemen on the Arabian Peninsula, Djibouti and Eritrea in the Horn of Africa.
- The strait's name translates to "Gate of Tears" in Arabic.
- The Bab-el-Mandeb Strait is a crucial trade route that connects the Mediterranean Sea and the Indian Ocean via the Red Sea and the Suez Canal.



POINTS TO PONDER

- What is the name of the carbon tax that the UK plans to implement from 2027 on imports of materials like steel and aluminium? - **Carbon Border Tax (CBT)**
- Recently, Haryana emerged victorious in the Vijay Hazare Trophy 2023-24 by defeating which team? - **Rajasthan**
- Which country presents the International Gender Equality Prize? - **Finland**
- What is the name of the potato disease responsible for significant damage to potato crops across various districts of Punjab? - **Late Blight**
- Whose forthcoming memoir is titled 'Four Stars of Destiny'? - **General M M Naravane**

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